

Rehoboth Beach Wastewater Treatment Plant Upgrade and Ocean Outfall Fact Sheet

The City of Rehoboth Beach maintains a discharge of treated wastewater to the Lewes & Rehoboth Canal, which flows in Rehoboth Bay. The discharge contributes nutrients to a part of the Bay that naturally experiences long flushing times. The result is that the waters of the Bay are polluted with nutrients; they are murky with algae and bay grasses cannot re-establish. To clean up the Inland Bays, the Dept. of Natural Resources and Environmental Control (DNREC) passed a Total Maximum Daily Loads (TMDL) regulation in 1998 that required systematic elimination of all point source discharges. Of the 13 original point source discharges to the Bays, only two remain unmitigated: the Town of Millsboro, which is scheduled to remove its discharge this year, and the City of Rehoboth Beach. The City of Rehoboth Beach has proposed to remove its discharge from the Bay by constructing an ocean outfall. The following is a timeline of the process that led to and followed the proposal, accompanied by facts about the proposal.

Timeline

DEC 1996	American Littoral Society and Sierra Club filed a complaint in the US District Court against EPA to ensure that TMDL regulations were established in DE.
DEC 1997	Consent order requiring EPA to ensure TMDL for the Inland Bays issued.
DEC 1998	TMDL regulation requiring elimination of point sources promulgated by DNREC.
DEC 1998	Rehoboth Beach filed an appeal of the TMDL regulation.
DEC 2002	DNREC and Rehoboth Beach sign a consent decree to eliminate the discharge.
AUG 2005	Revised permit for the RBWWTP issued by DNREC establishing that the discharge must be removed by DEC 31, 2014 per the 2002 consent decree.
AUG 2005	Final Report of the RBWWTP Effluent Disposal Study completed.
NOV 2009	Rehoboth Beach holds public hearing on the wastewater discharge alternatives.
APR 2012	Rehoboth Beach holds a public hearing on the Draft Environmental Impact Statement (EIS) for the proposed ocean outfall.
JUN 2012	DNREC Hearing Officers report on the Draft Environmental Impact Statement for the proposed ocean outfall issued.
DEC 2014	Discharge removal date per original consent decree.

Facts

RBWWTP Effluent Characteristics

The RBWWTP is an advanced secondary treatment plant that performs screening, primary settling, biological and chemical nutrient removal, secondary settling, and disinfection.

The RBWWTP has an annual average discharge of 1.1 million gallons per day. This is about 0.1% of the amount of annual precipitation supplying aquifers near Rehoboth Beach.

The nitrogen concentration of the effluent is 6.2 mg/L, the current annual average load is 17,120 lbs of nitrogen/yr and the anticipated annual average load is 47,470 lbs of nitrogen per year.

The phosphorus concentration of the effluent is 0.3 mg/L, the current annual average load is 1,180 lbs of phosphorus /yr and the anticipated annual average load is 2,650 lbs of phosphorus per year

The nitrogen and phosphorus loads from the Delaware Bay are 15,000 times and 22,000 times the proposed load of the effluent from the outfall.

Effluent enterococcus levels measured from the RBWWTP were from 2007 to 2009 were often zero and were well below the permitted limit on average.

The effluent is disinfected with chlorine and a dechlorination system is in place that removes all the chlorine prior to discharge.

Heavy metals in the effluent were found to be either below detection limits or were present at concentrations substantially below State Surface Water Quality Standards. With the exception of copper, all of the detections were less than the applicable water quality criteria for the protection of aquatic life.

Of 54 semi-volatile organic compounds analyzed there was only a single detection (bis (2-ethylhexyl) phthalate (BEHP)).

The concentration of total PCBs in the RBWWTP effluent was 425 pg/l., well below DNREC's marine chronic aquatic life criterion of 30,000 pg/l.

Alternatives Analysis

Six alternatives were considered during the City's analysis of how to eliminate its discharge:

Nutrient trading was rejected because nutrient credits were not available.

Land application, rapid infiltration basins, and well injection were rejected because land was not available and/or too costly, and/or because some nutrients would eventually enter the Bays through groundwater.

Ocean outfall was accepted because costs were low and nutrients would not enter the Bays.

Proposed Outfall Characteristics

The proposed outfall will be a 24 inch diameter pipe extending 6,000 linear feet (1.1 miles) from Deauville Beach to a diffuser in water 40 feet deep.

The outfall effluent would become rapidly diluted in the ocean. Dilution of 100:1 at 415 feet down current will occur in 5.4 minutes.

Other Information

The South Coastal WWTP has also operated an ocean outfall 6,000 off of Bethany beach since 1977 without documented issues to the ocean. Ocean City, MD also operates an outfall 4,600 feet off its beach.

The average residence time for a water particle that enters Rehoboth Bay is 90 days, therefore the daily discharge from the current point source in the Lewes and Rehoboth Canal would require 90 days on average to be completely removed from Rehoboth Bay.

Persistent Organic Pollutants (POPs), such as PCBs, can bioaccumulate in marine mammals and affect their health. POPs have been observed to be bioaccumulating in southern estuarine stocks of bottlenose dolphins on the Atlantic coast but not in the Northern Migratory Stock found off Delaware's Coast.

Due to 1) the lack of industrial waste and high levels of contaminants in the discharge and 2) the small size of the mixing zone of the discharge, it is unlikely that any bioaccumulation of POPs will occur in dolphins.

This information was compiled from documents from DNREC, the City of Rehoboth Beach, and the Report for City of Rehoboth Beach Wastewater Treatment Plant Ocean Outfall Project --Final Environmental Impact Statement, DEC 2012.